

less clearly related to the modern *Selaginella*, but they need not be further considered in the present connection.

### SHORTER NOTES

IS *CARDUUS UNDULATUS* NUTT. FOUND IN COLORADO? When, a number of years ago, I began collecting botanical specimens in Colorado, and later began collecting thistles, I supposed I would find *Carduus undulatus* Nutt. As time went by and I did considerable collecting, and became somewhat acquainted with the many forms of *Carduus* I began to doubt if it is to be found here.

The habitat of *Carduus undulatus* according to Nuttall is, "On the calcareous islands of Lake Huron and on the plains of Upper Louisiana"; and it was said to be 1 to 2 feet high. A part of Dr. Gray's description is, "principal bracts of the involucre . . . comparatively small and narrow, tipped with an evident spreading prickle." I have specimens of a *Carduus* collected by Dr. J. Lunell at Butte, Benson Co., North Dakota, which answer Dr. Gray's description of *Carduus undulatus* Nutt., and I am supposing they represent the true *C. undulatus*.

On the eastern side of the mountains in Colorado there are three species, some of which have been taken for *C. undulatus*. One of these is now *C. Plattensis* Rydb.; and since it has been described and its specific characters pointed out, it is readily recognized and considered to be distinct from *C. undulatus*. Another species which I suppose has been taken for the latter is *C. megacephalus* (Gray) Smyth. This is somewhat variable, especially in size, but it is characterized by the broader involucre bracts, and stouter spines, and I think may be readily recognized. The third member of the group is *C. Floodmani* Rydb. This is quite common on the plains, and in some respects answers better the description of *C. undulatus* than do the other two, since the involucre bracts may be said to be "comparatively narrow, and tipped with an evident spreading prickle."

Those on the western slope belonging to the group of *C. undulatus*, according to Dr. Rydberg's Flora of Colorado, are: *C. Traceyi* Rydb., *C. oblanceolatus* Rydb., *C. canescens* Nutt., and

*C. floccosus* Rydb. There seems to be some doubt as to just what *C. canescens* is, nor am I certain just what form is *C. oblancoelatus*. I have collected at Glenwood Springs a form with rather small heads, and small bracts, and having the leaves almost entire, which I have thought may be this; but the leaves of *C. floccosus* are often quite entire and it is possible that the forms I speak of may be referred to that. *C. Traceyi* is not very well known and it is not likely that it has often been referred to *C. undulatus*.

Probably the only one of these which has been generally referred to *C. undulatus*, is *C. floccosus*. This is quite widely distributed in middle elevations, and I have collected it not only at the type locality, Wolcott, Eagle Co., but at Hayden in Routt Co., Glenwood Springs in Garfield Co., Delta in Delta Co., and Ouray in Ouray Co. I should say that it differs quite widely from *C. undulatus* Nutt. Instead of being a foot or two high it is three or even four feet high, and the involucral bracts instead of being comparatively narrow, are comparatively wide, resembling rather those of *C. megacephalus*; and in some of the plants the leaves resemble the latter, and sometimes the heads approach it in size.

I can not say, of course for a certainty, that *Carduus undulatus* Nutt. is not found in Colorado, but after a number of years of collecting, I am quite sure I have not found it.

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## REVIEWS

### The western guide-books of the U. S. Geological Survey

Last year, when many more Easterners than usual were visiting the Pacific coast on account of the two California expositions, several national conventions, and the liberal concessions made by the transcontinental railroads in the way of rates, routes, stopovers, etc., the U. S. Geological Survey published a "Guidebook of the Western United States" in four parts (A to D), constituting Bulletins 611-614 of the Survey. The set comprises 794 pages, 95 maps, 152 plates, and 113 text-figures. Unlike other bulletins of the same series, which are distributed